

3 Steps Towards the Energy Transition



Bioenergy Europe's Manifesto for the
2024 European Elections



289

MtCO_{2eq}

Emissions saved in 2020 by sustainable bioenergy.

More than Italy's entire annual greenhouse gas emissions.

95%

of Bioenergy is produced in the EU.

Imports are coming from trusted allies.

x3

BY 2050

Bioenergy needs to triple to achieve net-zero.

(IEA 2023)

Bioenergy | An Essential Driver of Climate Neutrality

The European Union's heavy reliance on fossil fuels is a vulnerability that threatens Europe's energy supply, businesses, and citizens. Reaching the EU's climate and energy objectives requires a clear and structured strategy aimed at getting rid of fossil fuels. In this context, the bioenergy sector has the natural assets to play a pivotal role.

Bioenergy | A Truly European Innovation

The bioenergy industry is primarily a European sector and its innovations promote the EU's industrial competitiveness. The sector is also key to the local economy across Europe where it has the potential to create up to 1,5 million jobs in 2050¹.

Bioenergy | An Indispensable and Reliable Partner

Almost all net-zero scenarios show a need to considerably increase bioenergy to decarbonise heat, power, and transport. Bioenergy is scientifically acknowledged to be carbon-neutral and can be carbon-negative when combined with Carbon capture and storage (CCS) technologies. Furthermore, it can act as a baseload or a dispatchable energy source which reduces power peaks and compliments intermittent renewables.

¹Deloitte Global, *Towards an Integrated Energy System: Assessing Bioenergy's Socio-Economic and Environmental Impact, 2022.*



The next EU mandate will have to address pressing issues such as climate change, energy security and a rising cost-of-living. Bioenergy Europe has the knowledge and expertise to assist European policy makers in designing the necessary framework and proposes the following pathways.

3 Steps

01

DEFOSSILISING EUROPE

A Clear Fossil Fuels Exit Strategy

- End all fossil fuel subsidies and develop a clear defossilisation strategy.
- Calculate the full value-chain emissions for fossil fuels and create minimum standards.
- Require Member States to set end dates for the use of fossil fuels in different sectors with indicative trajectories and clear measures.

02

ENHANCING ENERGY SECURITY

Sustainable and Efficient Bioenergy Enhances Energy Security

- Launch an ambitious programme to replace old heat appliances.
- Establish a fund for the modernisation of heating appliances and promote investments in efficient bioenergy use.
- Add heat and energy storage mapping to the National Energy & Climate Plans.

03

GOING CARBON NEGATIVE

Unlock the Potential of Bioenergy with Carbon Capture and Storage (BECCS), utilisation (BECCU) and biochar (BCR)

- Enable a political and financial framework to accelerate the ramp-up of biogenic Carbon dioxide removal technologies (CDR).
- Set quantitative targets for technological carbon removals in 2030, 2040 and 2050.
- Promote synergies for bioenergy and BECCS in hard-to-abate sectors.

→ **Toward the Energy Transition**

A CLEAR FOSSIL FUELS EXIT STRATEGY

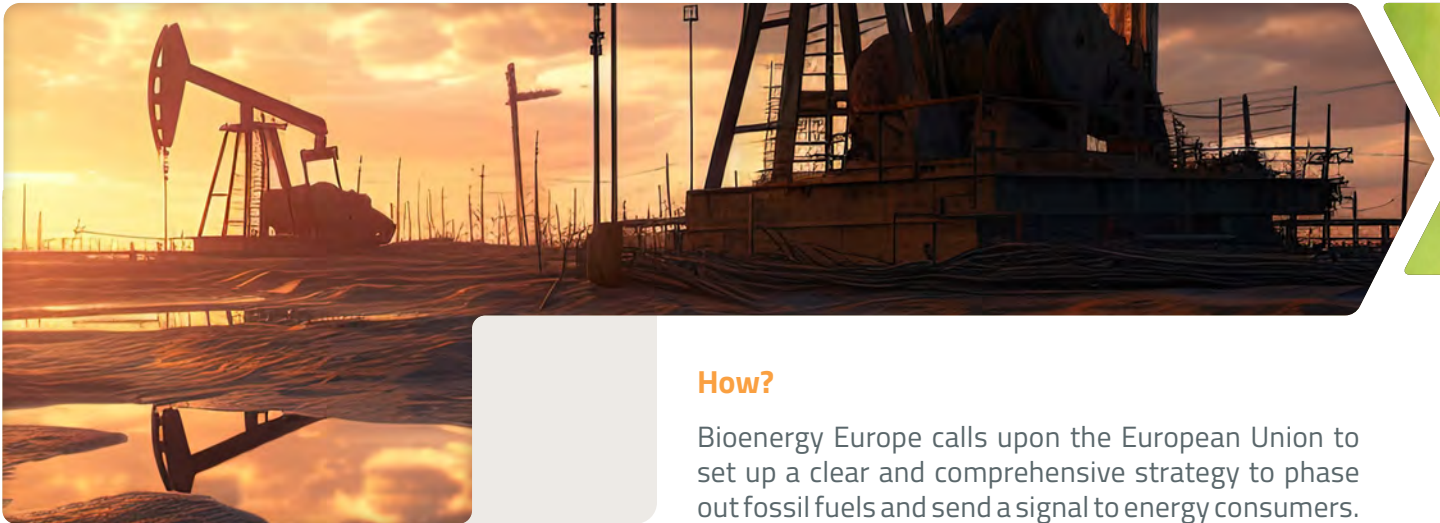
The next Commission should propose a strategy to end fossil fuels dependency and Member States should stop all public subsidies. Phasing out fossil fuels is essential to reduce greenhouse gas emissions, boost the development of Europe's renewable energy industry, and send a clear signal to consumers.

30%



70% of EU Energy comes from Fossil Fuels

8 Billion Tonnes

per year of CO₂ Emissions from Fossil Fuels

Why?

- **A fossil fuel exit strategy would strengthen the EU's energy security.** European countries are significantly dependent on fossil fuel imports from unreliable countries that are willing to use their privileged position in international markets as a strategic weapon. The EU must end this dependency and not merely replace fossil fuel imports from one unstable region with another.
- **A fossil fuel exit strategy would reduce the volatility of energy prices and stabilise the market.** The European Union stands at the forefront of developing industrial alternatives to fossil fuels. Displacing fossil fuels would provide a significant boost to European industrial competitiveness, not only at European level but also at a global stage.
- **A fossil fuel exit strategy would demonstrate global leadership in the fight against climate change.** Climate-related disturbances including heat waves, droughts, floods, severe storms, and wildfires are increasingly common all over Europe. Banning fossil fuels is the ambitious action that is needed to meet the objectives of the Paris Agreement and those of the Fit-for-55 Package.

How?

Bioenergy Europe calls upon the European Union to set up a clear and comprehensive strategy to phase out fossil fuels and send a signal to energy consumers. In concrete terms, Bioenergy Europe proposes that:

- **The Commission publishes a fossil fuel exit strategy** with clear and defined milestones.
- **The Commission supports the strategy by way of a regulation** which should include among others:
 - **a traceability system** for fossil fuels,
 - **a life-cycle assessment (LCA)** of all fossil fuels used for energy,
 - **criteria and maximum thresholds for emissions** to progressively phaseout fossil fuels,
 - and the **end of all form of subsidies to fossil fuels** by 2030.

Together with the above-mentioned blueprint, Bioenergy Europe suggests EU policy makers:

- Cease issuing permits to fossil fuel related investments
- Increase public taxation and carbon pricing on fossil fuels-intensive processes
- Introduce eco-labelling standards that restrict fossil fuels boilers from the European market
- Ban fossil fuel advertising

Only through a comprehensive and thorough package of measures is it possible to reach our ambitious climate and energy objectives on time.

ENERGY SECURITY THROUGH BIOENERGY

The EU will need to incentivise domestic renewable energy production to increase its energy security. Biomass for bioenergy is storable and bioenergy can be used as either a baseload or deployed on demand in response to supply shortages or consumption spikes. Furthermore, bioenergy has both environmental and economic benefits for healthy sustainable forest management.

Domestic
Energy
Production



Bioenergy surpassed
Oil in 1990, Gas in 2010
and Coal in 2016



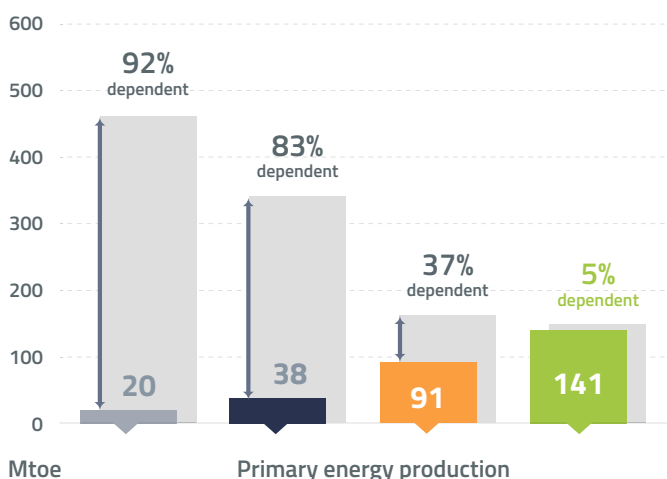
Why?

In 2021, the EU imported more than a half of its energy, nearly all of which was fossil fuels. In contrast, Europe's biomass is 95,7% reliant on domestic production, with imports coming from trusted allies and bioenergy is already Europe's largest indigenous energy source.

Bioenergy is an effective and versatile renewable solution and is responsible for 85% of all renewable heat. However, the heating sector, which makes up half (49%) of European energy consumption, remains dominated by fossil fuels.

Sustainable bioenergy should be integrated into an effective renewable energy plan that takes advantage of its capacity to balance and stabilise the energy system, even when this includes a large share of intermittent sources.

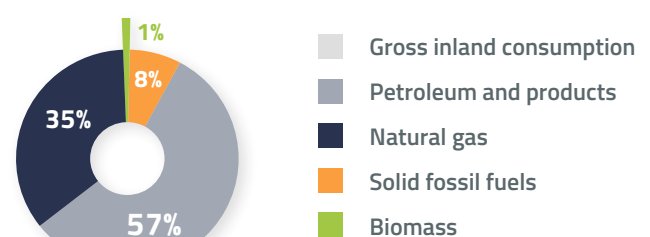
EU27 energy dependency and net imports (in 2021, Mtoe, %)



How?

Many renewable technologies are complementary and will need to be employed in a hybrid fashion to create a robust and resilient energy system.

- The EU should provide funding to replace and modernise heating appliances.** Modern biomass heating systems increase efficiency while reducing both emissions and bills for consumers.
- NECPs should include plans to tackle demand peaks and low production periods.** Such plans should be based on a scientific assessment of the different options, with multiple criteria to make them fit to the local needs.
- The EU should propose a plan for strategic biomass hubs.** Creating a European network of biomass hubs would increase the efficiency of biomass use and support the decarbonisation of heavy industry.
- Promote new dedicated research development and innovation (RDI) programmes** to mobilise biomass and promote synergies. Promoting such a holistic approach would help promote biodiversity and decrease negative impacts like eutrophication.



Source: Eurostat, Bioenergy Europe's calculations

BIOBASED REMOVALS TO GO CARBON NEGATIVE

In line with the 2015 Paris Agreement, the European Union has committed to sharply slash greenhouse gas emissions and reach climate neutrality by 2050.

Even with a drastic reduction in greenhouse gas emissions there will still be some unavoidable residual emissions which will need to be addressed by carbon dioxide removals.



The deployment of carbon dioxide removals to counterbalance hard-to-abate residual emissions is unavoidable if net-zero carbon dioxide or GHG emissions are to be achieved.

Intergovernmental Panel on Climate Change (IPCC)



Bioenergy with Carbon Capture

Bioenergy with carbon capture and storage (BECCS) and biochar (BCR) are the only carbon dioxide removal technologies that produce energy. With BECCS, CO₂ is captured and pumped deep into the bedrock where it is permanently stored and mineralised over time.

By capturing the biogenic carbon in biomass, BECCS reduces the amount of CO₂ in the atmosphere. Alternatively, the sequestered biogenic CO₂ can be used as base component for the chemical industry and other material uses (Bioenergy with carbon capture and use – BECCU).

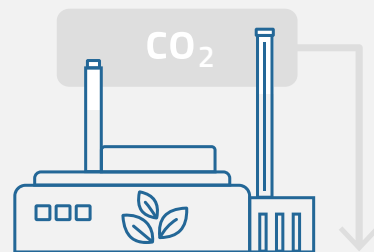
Biochar

Biochar can also be produced while creating bioenergy. Biochar is a stable form of carbon resulting from a thermochemical transformation of biomass which releases energy. Biochar cannot be attacked by micro-organisms and can be used in water filtration and management, as a soil additive to increase aeration and fertility, or even as a biobased alternative in the construction sector.

Why?

The volume of carbon removals needs to be scaled-up in the next two decades to achieve net-zero. While among carbon removal technologies, BECCS and biochar have relatively low costs, their deployment still requires high investments. Updated and stable regulations and new economic instruments are needed to enable the creation of large technological carbon removals.

BECCS Projections



Plans for around 20 facilities together capturing around 15 Mt CO₂ per year of biogenic emissions have been announced since January 2022².



UK Case

Under the *2023 Biomass Strategy*, the UK Government emphasised their willingness to develop bioenergy production, so it evolves from a carbon neutral form of energy to a carbon negative one, and set a target for engineered carbon removals.



US Case

Under the *Inflation Reduction Act*, the United States supports BECCS by providing tax credits now valued at 60 USD per tonne of CO₂ used and 85 USD per tonne of CO₂ stored.

² Based on current projects, carbon removal via BECCS could reach under 50 Mt CO₂/yr by 2030, which falls far short of the approximately 190 Mt CO₂/yr removed through BECCS by 2030 in the IEA scenario. "Net Zero Emissions by 2050 Scenario", International Energy Agency (IEA)



How?

The EU-wide voluntary framework to certify high-quality carbon removals was a first step in the right direction, but more needs to be done to unlock the full potential of BECCS:

- **The EU should set ambitious targets with milestones for technological removals and clearly distinguish them from land-based removals (AFOLU - Agriculture, forestry, and other land use).** These targets will send strong signals to industry and will catalyse investment.
- **The EU should provide stronger policy support and market incentives for the development and deployment of BECCS technologies.** This can be done through:
 - Subsidies
 - Tax incentives
 - Regulatory frameworks
 - Long-term contracts
 - Carbon purchase agreements
 - Carbon contracts for difference
 - Interlinkages and rewards with the ETS
- **The EU should support additional BECCS demonstration projects.** As carbon capture technology becomes more advanced and mature, it will become more efficient and cost-effective. These projects can provide valuable data, raise public awareness, and encourage private sector investment.

- **The EU should foster collaboration between governments, industry, research institutions, and civil society organizations.** Multi-stakeholder partnerships can drive innovation, address challenges, and ensure holistic approaches to the development of BECCS.
- **The EU should establish a European compliance market for permanent carbon removals.** Establishing a compliance market, like the ETS, will ensure that carbon removals are valued, supported, and generated.



EU's BECCS Scenarios ³		
	Minimum carbon removals	Maximum of carbon removals
2030	8 Mt CO ₂	44 Mt CO ₂
2040	46 Mt CO ₂	207 Mt CO ₂
2050	70 Mt CO ₂	336 Mt CO ₂

The table presents the minimum and maximum carbon removals in the EU climate's neutral scenarios.

³Scientific advice for the determination of an EU-wide 2040 climate target and a greenhouse gas budget for 2030–2050, European Scientific Advisory Board on Climate change, 15 June 2023

Bioenergy Europe is the voice of European bioenergy. It aims to develop a sustainable bioenergy market based on fair business conditions. Founded in 1990, Bioenergy Europe is a non-profit, Brussels-based international organisation bringing together 40 associations and 157 companies, as well as academia and research institutes from across Europe.

bioenergyeurope.org

